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| 10/771,464 | 02/05/2004 | Takashi Ozawa | Q79729 | 2948 |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/771,464 | OZAWA ET AL. | |
| | Examiner | Art Unit | |
| | Laura E. Martin | 2853 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *28 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) *6,8 and 10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 7, 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 13, 14, and 28 of copending Application No. 10/645797 in view of Wachi (20030210310).

| 10/771464 | 10/645797 |
|---|---|
| Claim 1: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein said at least one dye has a maximum absorption spectrum λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm, wherein the inkjet recording ink exhibits an accelerated fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour^{-1}$], in which the accelerated fading rate constant is determined by printing the ink on a reflection medium to prepare a printed matter, measuring a reflection density through a status A filter to define an initial value of reflection density ($D_B$) in the yellow region by | 1. An ink set comprising a plurality of inks different in hues, wherein the plurality of inks includes a black ink containing a coloring agent that is a dye having: a λmax of 500 nm to 700 nm; a half value width of 100 nm or more in an absorption spectrum of a dilute solution normalized to an absorbance of 1.0; and a forced fading rate constant of 5.0.times.$10^{-2}$ [$hour^{-1}$] or less, in which the forced fading rate constant is decided by dissolving and/or dispersing the dye in an aqueous medium to form an ink composition for inkjet recording, printing the ink composition on a reflection type medium, thereafter measuring a reflection density through a Status A filter, specifying one point having a reflection density ($D_B$) in an yellow region of 0.90 to 1.10 as an initial density of the ink, forcedly fading the printed |

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| one point between 0.90 and 1.10, and acceleratedly fading the printed matter by using an ozone fading tester capable of always generating 5 ppm of ozone, so as to define the fading rate constant from the time required until the reflection density reaches 80% of the initial value; and said at least one water-miscible organic solvent satisfies one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink. | matter by use of an ozone fading tester that can regularly generate 5 ppm of ozone, and determining the time taken until the reflection density reaches 80% of the initial density. |

Wachi teaches an aqueous medium comprising at least one water-miscible organic solvent satisfying one of the following requirements: 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100g) in the dye at 25°C; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100g) in the dye at 25°C, with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100g) in the dye at 25°C is not greater than 10% of the weight of the ink [0010-0011]. Wachi also teaches a total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Taguchi et al. with that of Wachi in order to improve ink composition.

This is a provisional obviousness-type double patenting rejection

Claims 1- 5 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/714845 in view of Wachi (20030210310).

| 10/771464 | 10/714845 |
|---|---|
| Claim 1: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein said at least one dye has a maximum absorption spectrum λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm, wherein the inkjet recording ink exhibits an accelerated fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour^{-1}$], in which the accelerated fading rate constant is determined by printing the ink on a reflection medium to prepare a printed matter, measuring a reflection density through a status A filter to define an initial value of reflection density ($D_B$) in the yellow region by one point between 0.90 and 1.10, and acceleratedly fading the printed matter by using an ozone fading tester capable of always generating 5 ppm of ozone, so as to define the fading rate constant from the time required until the reflection density reaches 80% of the initial value; and said at least one water-miscible organic solvent satisfies one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink. | Claim 1: An inkjet color ink comprising: an aqueous medium; at least one yellow dye having a λmax of from 390 nm to 470 nm and an [I(λmax+70 nm)/I(λmax)] ratio of an absorbance I(λmax+70 nm) at λmax+70 nm to an absorbance I(λmax) at λmax of not more than 0.4; and at least one dye having a λmax of longer than 470 nm and not longer than 750 nm, the at least one yellow dye and the at least one dye being at least dissolved or dispersed in the aqueous medium, wherein in case the ink is printed on a reflection medium so as to form a stepwise density, when a light having a wavelength of a λmax of the ink in a yellow region of 390 nm to 470 nm is illuminated to the printed medium, whose reflection spectrum of the light is measured by a spectrophotometer, and a point giving a reflection spectrum such that a reflection density, $D_B$, at the λmax of the ink in the yellow region, is from 0.90 to 1.10 is selected, a reflection density at a λmax of the ink in a region of longer than 470 nm and not longer than 750 nm at the point is defined as $D_X$, and the printed medium is discolored by force using an ozone discoloration tester capable of always generating 5 ppm of ozone, a forced discoloration rate constant determined from a time when each of the reflection densities $D_B$ and $D_X$ becomes 80% of an initial density is defined, and both of the rate constants are not more than 5.0x$10^{-2}$ $hour^{-1}$. |
| Claim 2: The inkjet recording ink as defined in claim 1, wherein the dye exhibits a λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.2 in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm. | Claim 2: The inkjet color ink according to claim 1, wherein the [I(λmax+70 nm)/I(λmax)] ratio is not more than 0.2. |
| Claim 3: The inkjet recording ink as defined in claim 1, wherein the dye has an oxidation potential of more positive than 1.0 V (vs SCE). | Claim 3: The inkjet color ink according to claim 1, wherein the yellow dye and the dye having a λmax of longer than 470 nm and not longer than 750 nm have an oxidation potential nobler than 1.0 V (vs SCE). |
| Claim 4: The inkjet recording ink as defined in claim 2, wherein the dye has an oxidation potential of more positive than 1.0 V (vs SCE). | Claim 4: The inkjet color ink according to claim 2, wherein the yellow dye and the dye having a λmax of longer than 470 nm and not longer than 750 nm have an oxidation potential nobler than 1.0 V (vs SCE). |
| Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink. | |

Wachi teaches an aqueous medium comprising at least one water-miscible organic solvent satisfying one of the following requirements: 1) all of said at least one

water-miscible organic solvent has a solubility of less than 10 (g/100g) in the dye at 25°C; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100g) in the dye at 25°C, with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100g) in the dye at 25°C is not greater than 10% of the weight of the ink. Wachi also teaches a total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Taguchi et al. with that of Wachi in order to improve ink composition.

This is a provisional obviousness-type double patenting rejection

Claims 1-3 and 5 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 7022170 in view of Wachi (20030210310).

| 10/771464 | 7022170 |
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| Claim 1: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein said at least one dye has a maximum absorption spectrum λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm, wherein the inkjet recording ink exhibits an accelerated fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour^{-1}$], in which the accelerated fading rate constant is determined by printing the ink on a reflection medium to prepare a printed matter, | Claim 1: An ink for ink jet recording, which comprises a dye having: a λmax in an aqueous solution of from 390 nm to 470 nm; and a I(λmax+70 nm)/I(λmax) ratio of not more than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at (λmax+70 nm), the dye being dissolved and/or dispersed in an aqueous medium, and the dye is represented by formula (1), A-N=N-B (1) wherein A and B each independently represents a heterocyclic group which may be substituted, wherein the ink has a forced fading rate constant of not greater than 5.0x$10^{-2}$ [$hour^{-1}$], in which the forced fading rate constant is decided by printing the ink on a reflection type medium, thereafter measuring a reflection density through a |

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| measuring a reflection density through a status A filter to define an initial value of reflection density ($D_B$) in the yellow region by one point between 0.90 and 1.10, and acceleratedly fading the printed matter by using an ozone fading tester capable of always generating 5 ppm of ozone, so as to define the fading rate constant from the time required until the reflection density reaches 80% of the initial value; and said at least one water-miscible organic solvent satisfies one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink.<br><br>Claim 6: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein the dye is a compound represented by formula (1) having a λmax at a wavelength range of from 390 nm to 470 nm, A-N=N--B (1) in which A and B each independently represents a heterocyclic group which may be substituted; and said at least one water-miscible organic solvent satisfies one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of Less than 10 (g100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25.degree. C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink. | Status A filter, specifying one point having a reflection density ($D_B$) in an yellow region of 0.90 to 1.10 as an initial density of the ink, forcedly fading the printed matter by use of an ozone fading tester that can regularly generate 5 ppm of ozone, and determining the time taken until the reflection density reaches 80% of the initial density, and the total amount of a cation in said ink except for a monovalent metal ion, a hydrogen ion, an ammonium ion, an organic quaternary nitrogen ion and an ion produced by the proton addition to a nitrogen atom in a basic organic material is 0.5 wt % or less. |
| Claim 2: The inkjet recording ink as defined in claim 1, wherein the dye exhibits a λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.2 in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm. | Claim 2: The ink for ink jet recording according to claim 1, wherein the λmax in an aqueous solution of the dye is 390 nm to 470 nm, and the I(λmax+70 nm)/I(λmax) ratio is not more than 0.2. |
| Claim 3: The inkjet recording ink as defined in claim 1, wherein the dye has an oxidation potential of more positive than 1.0 V (vs SCE). | Claim 3: The ink for ink jet recording according to claim 1, wherein the oxidation potential of the dye is more noble than 1.0 V (vs SCE). |
| Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink. | |

Wachi teaches an aqueous medium comprising at least one water-miscible organic solvent satisfying one of the following requirements: 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100g) in the dye at 25°C; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100g) in the dye at 25°C, with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10

(g/100g) in the dye at 25°C is not greater than 10% of the weight of the ink [0010-0011]. Wachi also teaches a total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Taguchi et al. with that of Wachi in order to improve ink composition.

This is a provisional obviousness-type double patenting rejection.

Claims 1-3 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 13, 14, and 28 of copending Application No. 10/645795 in view of Wachi (20030210310).

| 10/771464 | 10/645797 |
|---|---|
| Claim 1: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein said at least one dye has a maximum absorption spectrum λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm, wherein the inkjet recording ink exhibits an accelerated fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour^{-1}$], in which the accelerated fading rate constant is determined by printing the ink on a reflection medium to prepare a printed matter, measuring a reflection density through a status A filter to define an initial value of reflection density ($D_B$) in the yellow region by one point between 0.90 and 1.10, and acceleratedly fading the printed matter by using an ozone fading tester capable of always generating 5 ppm of ozone, so as to define the fading rate constant from the time required until the reflection density reaches 80% of the initial value; and said at least one water-miscible organic solvent satisfies one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink.<br><br>2. The ink set as described in claim 1, wherein the dye has the .lamda.max of from 390 nm to 470 nm and the I(.lamda.max+70 | 1. An ink set comprising a plurality of inks different in hues, wherein the plurality of inks includes a yellow ink containing a coloring agent that is a dye represented by the following general formula (1), A-N=N-B (1) wherein A and B each independently represent a heterocyclic group which may be substituted, the dye having: a λmax of from 390 nm to 470 nm; an I(.lamda.max+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at (λmax+70 nm); and a forced fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour.^{-1}$], in which the forced fading rate constant is decided by dissolving and/or dispersing the dye in an aqueous medium to form an ink composition for ink jet recording, printing the ink composition on a reflection type medium, thereafter measuring a reflection density through a Status A filter, specifying one point having a reflection density (DB) in an yellow region of 0.90 to 1.10 as an initial density of the ink, forcedly fading the printed matter by use of an ozone fading tester that can regularly generate 5 ppm of ozone, and determining the time taken until the reflection density reaches 80% of the initial density.<br><br>2. The ink set as described in claim 1, wherein the dye has the .lamda.max of from 390 nm to 470 nm and the I(.lamda.max+70 nm)/I(.lamda.max) ratio of not greater than 0.2.<br><br>3. The ink set as described in claim 1, wherein the dye has an oxidation potential of higher than 1.0 V (vs SCE). |

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| nm)/I(.lamda.max) ratio of not greater than 0.2.<br><br>3. The ink set as described in claim 1, wherein the dye has an oxidation potential of higher than 1.0 V (vs SCE). | |

Wachi teaches an aqueous medium comprising at least one water-miscible organic solvent satisfying one of the following requirements: 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100g) in the dye at 25°C; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100g) in the dye at 25°C, with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100g) in the dye at 25°C is not greater than 10% of the weight of the ink [0010-0011]. Wachi also teaches a total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Taguchi et al. with that of Wachi in order to improve ink composition.

This is a provisional obviousness-type double patenting rejection

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi (US 20040053998) in view of Wachi (20030210310).

**Taguchi discloses:**

Claim 1: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein said at least one dye has a maximum absorption spectrum λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm, wherein the inkjet recording ink exhibits an accelerated fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour^{-1}$], in which the accelerated fading rate constant is determined by printing the ink on a reflection medium to prepare a printed matter, measuring a reflection density through a status A filter to define an initial value of reflection density ($D_B$) in the yellow region by one point between 0.90 and 1.10, and acceleratedly fading the printed matter by using an ozone fading tester capable of always generating 5 ppm of ozone, so as to define the fading rate constant from the time required until the reflection density reaches 80% of the initial value (claim 1).

**Taguchi does not disclose:**

Claim 1: at least one water-miscible organic solvent satisfying one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of

said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink.

Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink.

**Wachi discloses:**

Claim 1: at least one water-miscible organic solvent satisfying one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink [0010-0011].

Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Taguchi with the disclosure of Wachi in order to provide a stable and high quality ink.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi (US 20040094064) in view of Wachi (20030210310).

**Taguchi discloses:**

Claim 1: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein said at least one dye has a maximum absorption spectrum λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm, wherein the inkjet recording ink exhibits an accelerated fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour^{-1}$], in which the accelerated fading rate constant is determined by printing the ink on a reflection medium to prepare a printed matter, measuring a reflection density through a status A filter to define an initial value of reflection density ($D_B$) in the yellow region by one point between 0.90 and 1.10, and acceleratedly fading the printed matter by using an ozone fading tester capable of always generating 5 ppm of ozone, so as to define the fading rate constant from the time required until the reflection density reaches 80% of the initial value (claim 1).

Claim 2: The inkjet recording ink as defined in claim 1, wherein the dye exhibits a λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.2 in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm (claims 1- 3).

Claim 3: The inkjet recording ink as defined in claim 1, wherein the dye has an oxidation potential of more positive than 1.0 V (vs SCE) (claim 3).

Claim 4: The inkjet recording ink as defined in claim 2, wherein the dye has an oxidation potential of more positive than 1.0 V (vs SCE) (claim 4).

**Taguchi does not disclose:**

Claim 1: at least one water-miscible organic solvent satisfying one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink.

Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink.

**Wachi discloses:**

Claim 1: at least one water-miscible organic solvent satisfying one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink [0010-0011].

Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Taguchi with the disclosure of Wachi in order to provide a stable and high quality ink.

Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi (US 20040050291) in view of Wachi (20030210310).

**Taguchi discloses:**

Claim 1: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein said at least one dye has a maximum absorption spectrum λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm, wherein the inkjet recording ink exhibits an accelerated fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour^{-1}$], in which the accelerated fading rate constant is determined by printing the ink on a reflection medium to prepare a printed matter, measuring a reflection density through a status A filter to define an initial value of reflection density ($D_B$) in the yellow region by one point between 0.90 and 1.10, and acceleratedly fading the printed matter by using an ozone fading tester capable of always generating 5 ppm of ozone, so as to define the fading rate constant from the time required until the reflection density reaches 80% of the initial value (claim 1).

Claim 2: The inkjet recording ink as defined in claim 1, wherein the dye exhibits a λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.2 in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm (claims 1- 3).

Claim 3: The inkjet recording ink as defined in claim 1, wherein the dye has an oxidation potential of more positive than 1.0 V (vs SCE) (claim 3.

**Taguchi does not disclose:**

Claim 1: at least one water-miscible organic solvent satisfying one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink.

Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink.

**Wachi discloses:**

Claim 1: at least one water-miscible organic solvent satisfying one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-

miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink [0010-0011].

Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Taguchi with the disclosure of Wachi in order to provide a stable and high quality ink.

Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi (US 7022170) in view of Wachi (20030210310).

**Taguchi discloses:**

Claim 1: An inkjet recording ink comprising: an aqueous medium comprising at least one water-miscible organic solvent; and at least one dye dissolved and/or dispersed in the aqueous medium, wherein said at least one dye has a maximum absorption spectrum λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.4, in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm, wherein the inkjet recording ink exhibits an accelerated fading rate constant of not greater than 5.0.times.$10^{-2}$ [$hour^{-1}$], in which the accelerated fading rate constant is determined by printing the ink on a reflection medium to prepare a printed matter, measuring a reflection density through a status A filter to define an initial value of reflection density ($D_B$) in the yellow region by one point between 0.90 and 1.10, and acceleratedly fading

the printed matter by using an ozone fading tester capable of always generating 5 ppm of ozone, so as to define the fading rate constant from the time required until the reflection density reaches 80% of the initial value (claim 1).

Claim 2: The inkjet recording ink as defined in claim 1, wherein the dye exhibits a λmax at a wavelength range of from 390 nm to 470 nm and a I(λmax+70 nm)/I(λmax) ratio of not greater than 0.2 in which I(λmax) is the absorbance at λmax and I(λmax+70 nm) is the absorbance at λmax+70 nm (claims 1- 3).

Claim 3: The inkjet recording ink as defined in claim 1, wherein the dye has an oxidation potential of more positive than 1.0 V (vs SCE) (claim 3).

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Claim 1: at least one water-miscible organic solvent satisfying one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink.

Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink.

**Wachi discloses:**

Claim 1: at least one water-miscible organic solvent satisfying one of the following requirements 1) and 2): 1) all of said at least one water-miscible organic

solvent has a solubility of less than 10 (g/100 g) in the dye at 25 C.; 2) at least one of said at least one water-miscible organic solvent has a solubility of not smaller than 10 (g/100 g) in the dye at 25 C., with the proviso that the sum of the weight of the water-miscible organic solvent having a solubility of not smaller than 10 (g/100 g) in the dye at 25 C. is not greater than 10% of the weight of the ink [0010-0011].

Claim 5: The total amount of said at least one water-miscible organic solvent is 1 to 60 weight% based on the ink [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Taguchi with the disclosure of Wachi in order to provide a stable and high quality ink.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Laura E. Martin

9/4/07

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